

- 9. The planet and satellite unsteady.
- 11. The planet tremulous.

The initials M., L., K., B., are those of Mr. Main, Mr. Lucas, Mr. Keating, and Mr. Bellamy.
The instruments used were the Heliometer and the 10-foot telescope.
The assumed longitude of the Radcliffe Observatory is 5^m 2^s 6 West.

Occultations of Stars by the Moon, and Eclipses of Jupiter's Satellites, observed at Windsor, New South Wales. By John Tebbutt, Esq.

The following is a list of lunar occultations of stars and eclipses of *Jupiter's* satellites observed by me during the year 1873. The occultations are disappearances only at the Moon's dark limb, the phenomena not being previously computed. The quadrant of the moon's limb, where it could be determined, at which each disappearance took place, will be found in the fourth column of the occultation table. Where the quadrant is not stated, it is to be understood, except in the case of May 12th, that the disappearances occurred in or very near the plane passing through the observer and the centres of the Sun and Moon. The second occultation for April 1st was observed with the old 3¼-inch refractor, and a power of about 30; all the other occultations were observed with the 4½-inch Equatoreal, and a power of 55. The latter instrument, with a power of 180, was employed in all the eclipse observations.

Lunar Occultations of Stars, 1873.

Date of Obs.	Mag. of Star.	Observatory Mean Time of Disappearance.			Quadrant.	Remarks.
		h	m	s		
1874. April 1	4	6	53	44.3	S.	Disappearance seen through light cloud.
„ 1	7	7	23	52.5	S.	Star very faint on limb.
„ 5	8	8	9	32.0	...	Good observation. Disappearance pretty sudden.
„ 5	7	8	17	16.4	...	Very good observation. Disappearance sudden.
„ 5	8	8	20	32.4	S.	{ Pretty good obs., but uncertain, perhaps to half a second, owing to star's faintness on limb.
May 12	8	8	23	51.5	Moon totally eclipsed.	{ Disappearance pretty sudden.
„ 12	8½	8	35	45.3		{ Very faint at disappearance.
„ 12	8	8	37	5.8		{ Star appeared to advance slightly within limb.
„ 12	8½	8	53	59.3		{ Approximate, star being extremely faint.
„ 12	9	9	11	54.3		

Date of Obs.	Mag. of Star.	Observatory Mean Time of Disappearance.	Quad- rant.	Remarks.
1873.		h m s		
June 2	7½	9 13 24.6	N.	Uncertain to half a second.
" 2	7½	9 22 48.5	S.	Very good observation.
" 3	7½	6 34 7.3	N.	
" 5	7	10 8 8.4	N.	Disappearance pretty sudden.
" 5	7	10 16 38.4	S.	Ditto ditto.
" 8	5	9 2 4.5	S.	{ Very good observation. The star was distinct, and disappeared apparently by two stages.
July 31	7½	6 30 43.3	S.	Disappearance instantaneous.
Aug. 27	7	7 26 38.6	N.	Disappearance pretty sudden.
" 28	8	6 51 27.0	N.	Star very faint. Obs. uncertain to 1 second.
" 28	7½	7 1 24.1	...	Good obs. Disapp. not quite instantaneous.
" 28	7	7 50 6.4	S.	Obs. very good. Disappearance instantaneous.
" 28	7½	7 50 41.9	S.	Ditto ditto.
" 28	8	8 24 12.9	S.	Ditto ditto.
" 29	7½	6 32 19.7	N.	Good observation. ditto.
" 29	7½	6 44 58.3	...	Good obs. Disappearance not quite instantaneous.
" 29	7½	7 1 31.0	N.	Star faint. Uncertain to a quarter of a second.
" 29	7½	9 27 53.0	...	Good obs. Disappearance sudden.
" 29	7½	9 44 21.9	S.	Ditto. ditto.
" 30	7	7 1 21.7	N.	Obs. very good. Disapp. not quite instantaneous.
" 30	7	8 11 42.9	N.	Ditto. Disappearance instantaneous.
" 30	7	8 42 33.9	N.	Ditto. ditto.
Sept. 2	2	13 27 17.2	N.	{ Disapp. instantaneous, but obs. uncertain to a considerable fraction of a second.
" 30	7	8 48 18.4	N.	
Oct. 27	7	7 38 56.1	...	
" 27	8	7 40 27.7	...	Star faint.
" 27	7	8 34 53.6	N.	
" 27	8	9 1 57.5	N.	
" 28	7½	8 39 57.1	S.	Very good obs. Disappearance instantaneous.

Eclipses of Jupiter's Satellites, 1873.

Date of Obs. 1873.	Satel- lite.	Phase of Eclipse.	Observatory Mean Time of Phase.	Remarks.
			h m s	
April 4	IV.	D	10 17 14.0	Tolerable definition, but disapp. very gradual.
" 6	II.	R	6 32 25.5	Sky beautifully clear. Good observation.
" 21	IV.	R	8 52 41.3	Obs. late, owing to a passing cloud.

Date of Obs.	Satel- lite.	Phase of Eclipse.	Observatory Mean Time of Phase. h m s	Remarks.
1874. Apr. 25	I.	R	8 37 47.3	Cloudless evening. Excellent definition.
May 11	I.	R.	6 56 57.6	{ Moon near opposition. Observation through thin filmy clouds.
„ 15	II.	R	8 50 23.4	Good definition. Bright moonlight.
„ 18	I.	R	8 51 52.1	Sky slightly hazy. Pretty good definition.
„ 27	I.	R	5 15 47.7	{ Twilight. Beautifully clear and definition pretty good.
June 3	I.	R	7 11 0.8	{ Good definition, and sky beautifully clear. Moon in first quarter, and not far from planet.
July 12	I.	R	5 44 4.1	{ Sky clear, but planet boiling and somewhat tremulous. Belts pretty distinct.

Windsor, New South Wales, 1874, April 9.

*Observations of the Zodiacal Light.**

By Vincent Fasel, Esq.

I would beg to submit to the Astronomical Society the following report on the Zodiacal Light, which, in the early months of the present year, has been displayed in this locality (Morges, Switzerland) with no ordinary brilliancy, and for that reason I feel the more induced to transmit my own observations, with the hope that they may prove interesting, and perhaps be of some value for comparison with those recorded in other distant places.

The first opportunity I had of examining the luminous phenomenon was on the evening of the 5th of February last, at 8^h p.m., L.M.T., when it exhibited the usual figure of a slightly inclined cone, with a very faint vertex, reaching, on this occasion, to a line drawn from θ *Arietis* to ξ^2 *Ceti*. The light was very distinct and bright, specially on the axis and towards the horizon, but the outline could not easily be made out. A line drawn from θ to γ *Arietis*, passing near to and to the south of ρ *Piscium* and γ *Pegasi*, down to the horizon, would indicate the northern boundary; the southern one, though not well defined, the light fading off gradually near it, passed from a little south of ξ^2 *Ceti*, taking in α *Piscium*, to about ϕ^1 *Ceti*. Sky clear, a fine starry night, and *Mars* shining brightly in a mass of diffused light. February 6th, at 7^h 15^m p.m., another fine clear evening; the Zodiacal Light more conspicuous than on the previous day, with a better defined conical figure. The contour of the vertex, extremely faint, could but just be traced out to π and μ *Arietis*. The light appeared quite as bright as the *Milky Way*, and with a

* The Paper was accompanied by two Drawings.—ED.